Claims:

We claim:

1. A hard disk drive mounting hub for mounting a disk having opposite parallel faces between a disk outside diameter and a coaxial disk inside diameter defining a central opening therethrough, wherein said hub comprises:

a cylindrical hub body defining a hub outside diameter disposed along a central axis;

a cylindrical disk mounting member disposed coaxial with said central axis at one end of said body, defining the mounting member inside diameter extending proximally from said one end of said body, and sized to be received through said disk opening, and;

a coaxial hub face extending about said mounting member, said hub face defining a truncated conical surface of revolution symmetrical about said axis, that is disposed at an oblique hub conning angle Ω relative to said axis.

2. The hard disk mounting hub of claim 1, wherein:

said mounting hub receives said disk mounted perpendicular to said hub axis and fitted with said disk inside diameter around said mounting member inside diameter with one disk face proximal and adjacent to said hub face.

3. The hard disk mounting hub of claim 2, wherein:

a suitable clamping force F is applied toward said hub face from said opposite disk face over an interior central portion of said opposite disk face.

4. The hard disk mounting hub of claim 3, wherein:

said interior central portion of said disk bends toward essentially conical contiguity with said truncated conical hub face surface at said oblique hub conning angle and away from parallel to the remaining exterior portion of said disk, while said remaining exterior portion of said disk remains disposed within an acute disk conning angle limit relative to a perpendicular to said axis.

5. The disk mounting hub of claim 1, wherein said oblique angle is selected to form a hub face having a concave conical surface contour.

6. The disk mounting hub of claim 1, wherein said oblique angle is selected to form a hub face having a convex conical surface contour.

7. The disk mounting hub of claim 1, in which said hub comprises materials selected from the group consisting of aluminum and steel.

8. The disk mounting hub of claim 3, in which said clamping force F is applied to say opposite disk face by a clamping member attached to said hub-mounting member.

9. The disk mounting hub of claim 8, in which said hub-mounting clamp member includes an axial-acting spring member between a disk contact end in contact with said opposite disk surface and a rigid base end mounted to said hub mounting member at its extreme proximal end wherein said clamp member is arranged to exert said force F on said disk surface toward said hub.

10. A hard disk drive having a disk clamp for fixing at least one disk mounted on a drive spindle by application of distributed axial compressive force F directed against one side of said at least one disk on said spindle, said axial force F distributed circumferentially and radially around said disk spindle, a disk mounting hub comprising:

a rigid cylindrical hub body defining a hub outside diameter disposed along a central axis;

a cylindrical disk mounting member disposed coaxial with said axis at one end of said body, defining a coaxial member inside diameter extending proximally from said one end of said body, said member inside diameter sized to be received through said disk opening;

a coaxial hub face extending about said mounting member, said hub face defining a truncated conical surface of revolution symmetrical about said axis, that is disposed at an oblique hub conning angle Ω relative to said axis.

11. The hard disk drive of claim 10, wherein:

said mounting hub receives said at least one mounted disk perpendicular to said hub axis and fitted with disk inside diameter around said mounting member inside diameter with one disk face proximal and adjacent to said hub face.

12. The hard disk drive of claim 11, wherein: a distributed clamping force F is applied toward said hub face from said opposite disk face over an interior central portion of said opposite disk face.

13. The hard disk drive of claim 12, wherein:

said interior central portion of said disk bends toward essentially conical contiguity with said truncated conical hub face surface at said oblique hub conning angle and away from parallel planarity with the remaining exterior portion of said disk, while said remaining exterior portion of said disk remains disposed within an acute disk conning angle limit relative to a perpendicular to said axis.

14. The hard disk drive of claim 10, wherein said oblique angle is selected to form a hub face having a concave conical surface contour.

15. The hard disk drive of claim 10, wherein said oblique angle is selected to form a hub face having a convex conical surface contour.

16. The hard disk drive of claim 10, in which said hub comprises materials selected from the group consisting of aluminum and steel.

17. The hard disk drive of claim 10, in which said clamping force F is applied to said opposite disk face by a clamping member attached to said hub-mounting member.

18. The hard disk drive of claim 11, in which said hub-mounting clamp member includes an axial-acting spring member between a disk contact end in contact with said opposite disk surface and a rigid base end mounted to said hub mounting member at its extreme proximal end wherein said clamp member is arranged to exert said force F on said disk surface toward said hub.

19. A method for making a disk mounting hub for mounting a disk on an axial hard disk spindle in which said disk has opposite parallel faces between a disk outside diameter and a coaxial disk inside diameter defining a central opening there through, comprising:

a step of defining a rigid cylindrical hub body having a hub outside diameter disposed along a central axis;

a step of defining a cylindrical disk-mounting member disposed coaxial with said central axis at one end of said body;

a step of defining a coaxial member to extend proximally with an inside diameter from said one end of said body;

a step of sizing said member inside diameter to be received through said disk opening;

a step of defining a coaxial hub face extending between said hub outside diameter and said member inside diameter adjacent to said one end of said hub as a truncated conical surface of revolution symmetrical about said axis, in which said conical surface is disposed at an oblique hub conning angle Ω relative to said axis.

20. The method of claim 19 comprising:

a step of selecting said angle Ω so that:

with said disk mounted perpendicular to said hub axis and fitted with said disk inside diameter around said mounting member inside diameter with one disk face proximal and adjacent to said hub face;

and a predetermined axial force distribution F applied toward said hub face from said opposite disk face over an interior central portion of said opposite disk face;

then said interior central portion of said disk bends toward essentially conical contiguity with said truncated conical hub face surface at said oblique hub conning angle and away from parallel to the remaining exterior portion of said disk, while said remaining exterior portion of said disk remains disposed within an acute disk conning angle limit relative to a perpendicular to said axis.

21. The method of claim 19, wherein said oblique angle is selected to form a hub face having a concave conical surface contour.

22. The method of claim 19, wherein said oblique angle is selected to form a hub face having a convex conical surface contour.

23. The method of claim 19, comprising a step of defining said hub from materials selected from the group consisting of aluminum and steel.

24. The method of claim 19, comprising:

a step in which said clamping force F is applied to said opposite disk face by a clamping member attached to said hub-mounting member.

25. The method of claim 19, comprising:

a step of providing said hub-mounting clamp member to include an axial-acting spring member between a disk contact end in contact with said opposite disk surface and a rigid base end mounted to said hub mounting member at its extreme proximal end wherein said clamp member is arranged to exert said force F on said disk surface toward said hub.